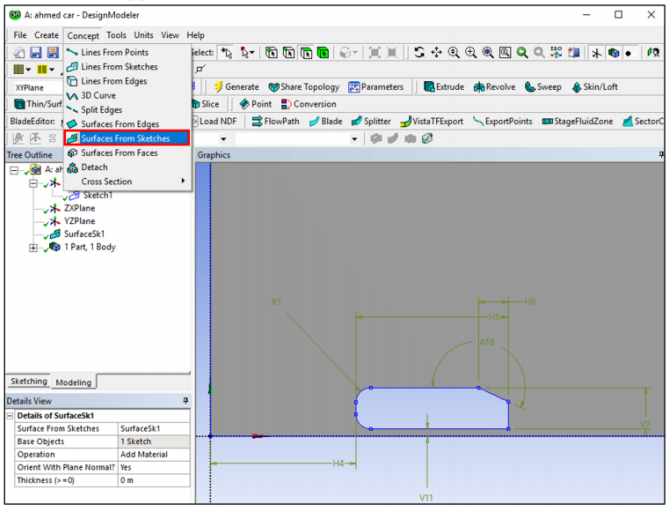
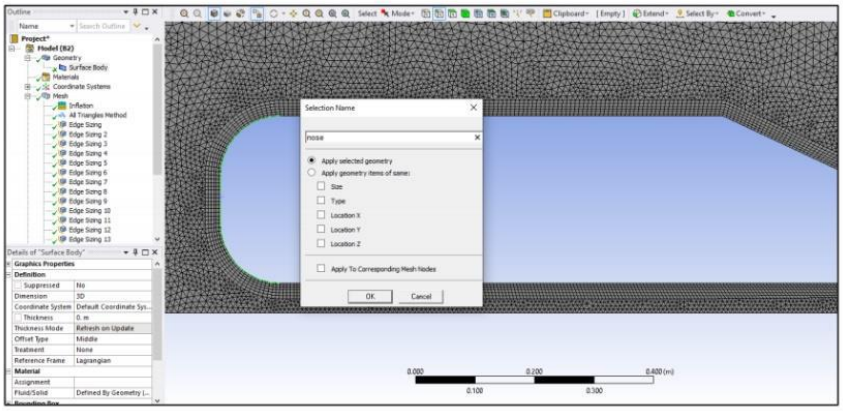
CFD LAB 4

1. Making Geometry



2. Grid generation



3. Fluent Set up

Transient solver(k-epsilon)

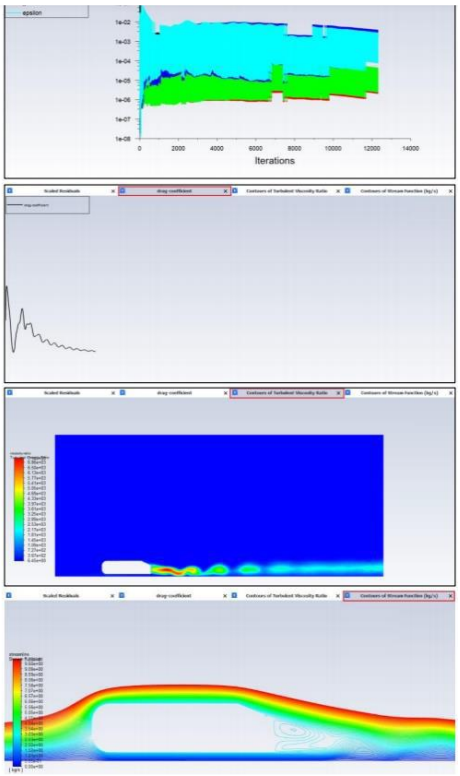
Inlet velocity: 40m/s

Reynold #: 7.68×10^5

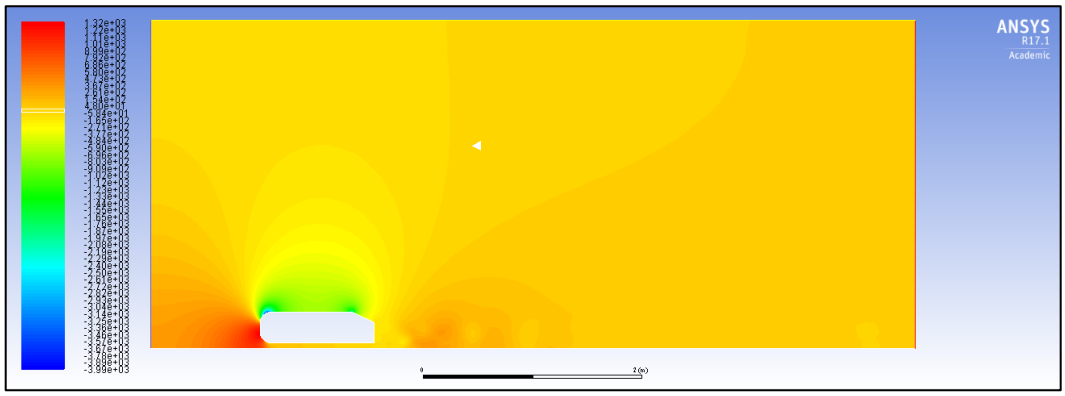
Turbulent intensity: 2.93 %

Turbulent viscosity ratio: 10

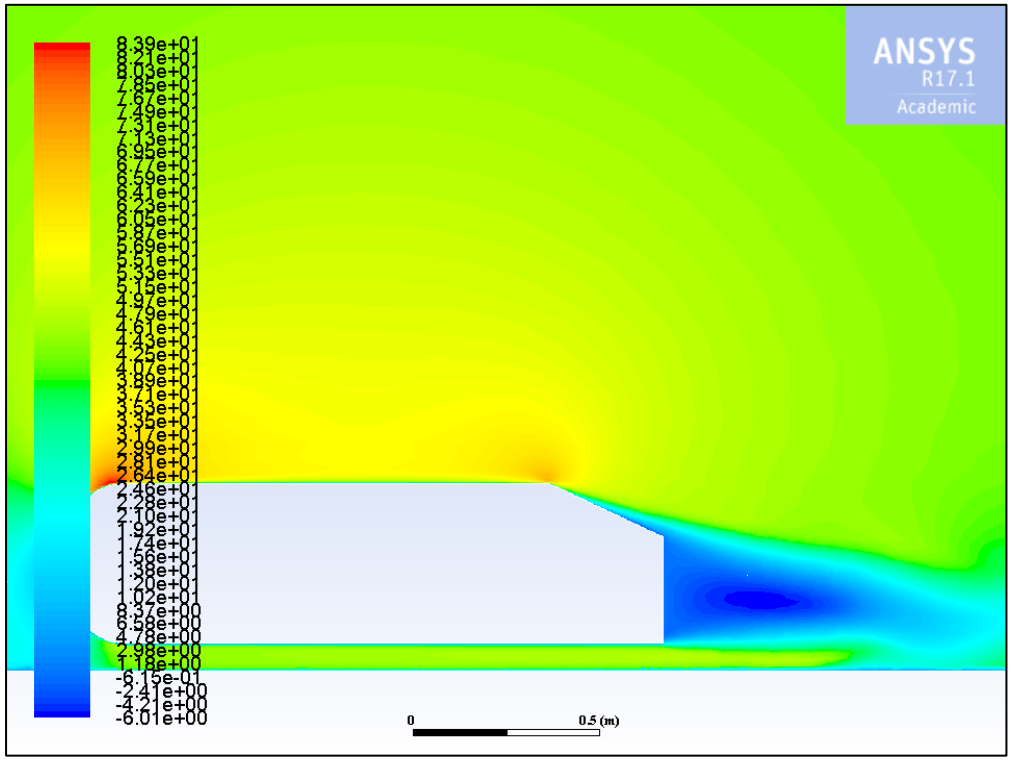
Pressure scheme: PISO



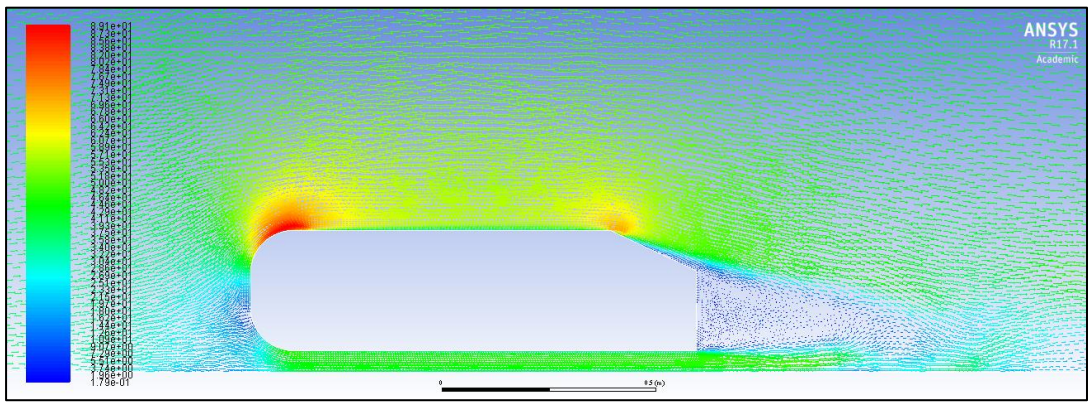
Pressure distribution



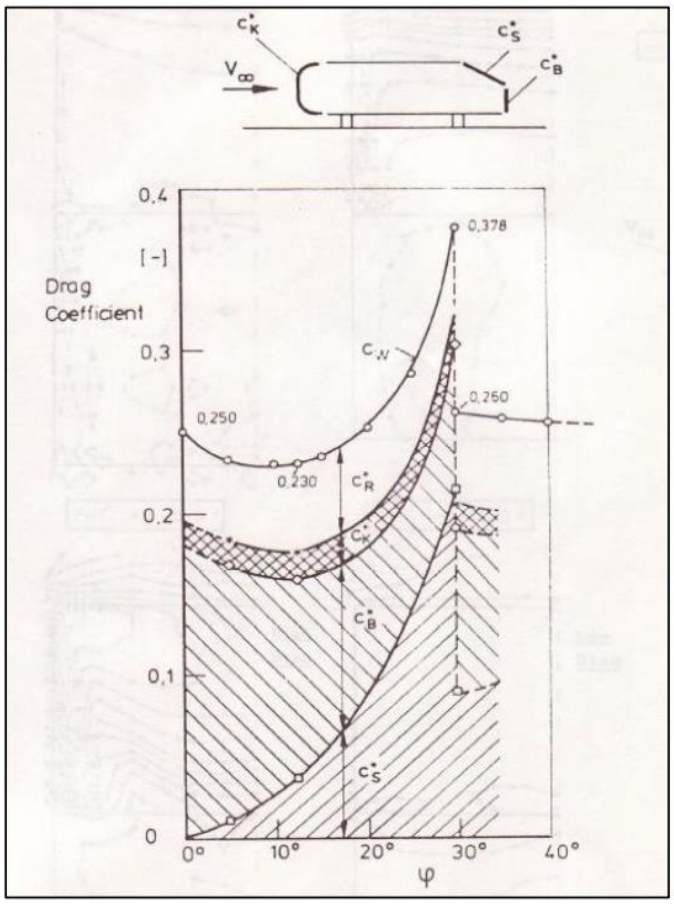
Velocity magnitude



Velocity vector



Student need to calculate drag coefficient in each part as below and need to answer below Questions.



- Do you observe separations in the wake region (use streamlines)? If yes, where is the location of separation point?
- What is the Strouhal number based on the shedding frequency (C_D vs. time), the height of the Ahmed body and the inlet velocity? Note: the shedding frequency f=1/T where T is the typical period of the oscillation of C_D that can be evaluated using the peaks between 0.1<time<0.14.
- **Figures need to be reported:** (1) XY plots for residual history, (2) modified U vs. y-by-h (with EFD), (3) Modified-TKE vs. y-by-h, (4) time history of drag coefficient, (5) Contour of pressure, (6) contour of velocity magnitude, (7) velocity vectors, (8) 3 or 4 snapshots of animations for turbulent-viscosity-ratio and streamlines (hints: you can use <<**Alt+print Screen**>> during the play of the animations).
- **Data need to be reported:** the above table with values.